10-6 USE OF PREFABRICATED EPOXY COATED REINFORCEMENT IN MARINE ENVIRONMENT

Marine Environment

Structures or structural components are considered to be exposed to marine environment in each of the following conditions:

a) Where they are in direct contact with corrosive water which may be either brackish or marine water.

b) Where they are within the "splash zone." This zone is bounded by a horizontal plane that is 6 meters above the mean higher high water (MHHW) elevation of corrosive water and vertical planes that are 6 meters from the edge of corrosive water on the shore. Structures or structural components within the splash zone are likely to be exposed to corrosive water spray.

c) Where they are within 300 meters from corrosive water, but are outside the splash zone, and are likely to be exposed to salt fog (marine atmosphere).

Brackish waters typically have a chloride content between 500 mg/kg and 9400 mg/kg, while marine waters have a chloride content that is greater than 9400 mg/kg.

Refer to MTD 10-5 for different zones in marine environment.

Prefabricated Epoxy Coated Reinforcement

Prefabricated epoxy coated reinforcement (ECR) specified for use on Caltrans projects shall have epoxy coating conforming to ASTM Designation: A 934/ A 934M. In prefabricated ECR, the reinforcing bar is fabricated (cut to the required length and bent to the required shape) and then coated with a protective fusion bonded epoxy coating conforming to ASTM A 934/ A 934M. This coating has better corrosion resistance characteristics than epoxy coating conforming to ASTM A 775/ A 775M.

Prefabricated ECR shall be specified in reinforced concrete as required by BDS Table 8.22.1:

The Design Engineer shall obtain the approval from the Deputy Chief, Division of Engineering Services, Structure Design, before specifying prefabricated ECR in conditions other than those specified in BDS Table 8.22.1.

If adequate protection to reinforcement as specified in BDS Table 8.22.1 cannot be provided due to design and/or construction constraints, contact the Corrosion Technology Branch.

General Guidelines

For structures that are exposed to a marine environment, the Design Engineer shall ensure the following:

a) Plans shall clearly identify locations where prefabricated ECR is used. In addition, this information shall be furnished to the Specifications Engineer through a "Memorandum to Specifications Engineer."

b) The Design Engineer shall specify prefabricated ECR in the "splash zone." If site specific information indicates that corrosion of reinforcement, from exposure to corrosive water spray, is a concern outside the "splash zone," then the extent of prefabricated ECR shall be increased accordingly.

c) Mechanical splices and butt-welded splices in prefabricated ECR shall be adequately protected from corrosive environment using products and procedures that are currently approved by the Corrosion Technology Branch.

References: BDS 8.22, MTD 8-2 and MTD 10-5

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